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HYDRAULIC REEL ADAPTED FOR ATTACHMENT TO A SKID STEER

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to hydraulic reels for pipeline cleaning and more specifically to a hydraulic reel adapted for attachment to a skid steer.

2. Discussion of the Prior Art

It is usually necessary to have a hydraulic reel in close proximity to a pipeline access. However, sometimes the pipeline access is located in a confined space. Presently, there appears to be only one portable, self-propelled hydraulic reel which will fit in the confined space. This self-propelled hydraulic reel is capable of moving over grass or firm ground. However, this device is not well-suited for muddy or rough terrain.

Accordingly, there is a clearly felt need in the art for a hydraulic reel adapted for attachment to a skid steer which allows the hydraulic reel to be transported over any terrain that a skid steer can travel.

SUMMARY OF THE INVENTION

The present invention provides a hydraulic reel adapted for attachment to a skid steer. The hydraulic reel adapted for attachment to a skid steer (hydraulic reel) preferably includes a base frame, a reel frame, a reel, and a hydraulic motor. The base frame includes a base mounting frame and a base pivot frame. One end of the base mounting frame is adapted to be retained by a quick mount member of the skid steer and the base pivot frame

extends from the opposite end of the base mounting frame. The reel frame includes a reel base support and two upright members. A single upright member extends upward from each opposing end of the reel base support. A bottom of the reel base support is pivotally attached to the base pivot frame. The two upright members are spaced apart to receive the reel. The reel includes a hose reel, an axle, and a rotary union. Preferably, one end of a hose guide extends from the reel base and a pulley is pivotally attached to the other end thereof. The pulley guides a hose as it is unreeled from the hose reel. The axle is tubular, but sealed on one end thereof. A hose outlet extends from substantially one end of the axle. A hose opening is formed through the hose reel to communicate with the hose outlet. A hose is inserted through the hose opening and attached to the hose outlet.

The rotary union is attached to a nonsealed end of the axle such that liquid may pass through the axle, the hose outlet, and the hose. A single roller bearing is mounted on a top of each upright member. Each roller bearing is sized to receive a single end of the axle. A hydraulic motor mounted to one of the upright members is used to rotate the hose reel. A hydraulic valve is used to control the hydraulic motor. Hydraulic oil is taken from the skid steer hydraulic system. The hydraulic reel may be moved wherever desired with the skid steer.

Accordingly, it is an object of the present invention to provide a hydraulic reel adapted for attachment to a skid steer.

It is a further object of the present invention to provide a hydraulic reel which may be transported into a confined space.

Finally, it is another object of the present invention to provide a hydraulic reel which may be transported over muddy or rough terrain

These and additional objects, advantages, features and benefits of the present invention will become apparent from the following specification.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective view of a hydraulic reel attached to a skid steer in accordance with the present invention.

Figure 2 is a side view of a hydraulic reel adapted for attachment to a skid steer in accordance with the present invention.

Figure 3 is a top view of a hydraulic reel adapted for attachment to a skid steer in accordance with the present invention.

Figure 4 is a front view of a hydraulic reel adapted for attachment to a skid steer in accordance with the present invention.

Figure 5 is a cross sectional view of a base frame of a hydraulic reel adapted for attachment to a skid steer in accordance with the present invention.

Figure 6 is a cross sectional view of a hose reel of a hydraulic reel adapted for attachment to a skid steer in accordance with the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

With reference now to the drawings, and particularly to figure 1, there is shown a perspective view of a hydraulic reel adapted for attachment to a skid steer (hydraulic reel) 1. With reference to figures 2 - 5, the hydraulic reel 1 preferably includes a base frame 10, a reel frame 12, a reel 14, a hydraulic motor 16, and a hose guide 18. The base frame 10 includes a base mounting frame 20 and a base pivot frame 22. The base mounting frame 20 preferably includes an upper cross member 24, a lower cross member 26, and two end plates 28.

Preferably, a pair of retention plates 30 are attached to the upper cross member 24 and a pair of slot retention plates 32 are attached to the lower cross member 26. Each slot retention plate 32 includes a lock slot 33. Each retention plate 30 and slot retention plate 32 has a cross section that is shaped to be retained by a quick mount member 102 of a skid steer 100. A pair of locking pins 104 releasably extend from a bottom of the quick mount member 102 of the skid steer 100. Each locking pin 104 is inserted into a single lock slot 33 to attach the hydraulic reel 1 to the skid steer 100. Preferably, a step 34 extends outward from each end plate 28 to help an operator step into the skid steer 100.

The base pivot frame 22 extends from substantially a bottom of the base mounting frame 20. The base pivot frame 22 includes a pair of support members 36 and a pivot bushing 38. One end of each support member 36 is joined together and the other end of each support member 36 is attached to the base mounting frame 20. The

reel frame 12 includes a reel base support 40, a bearing upright member 42, and a motor upright member 44. The bearing upright member 42 extends upward from one end of the reel base support 40 and the motor upright member 44 extends upward from the other end of the reel base support 40. The two upright members are spaced apart to receive the reel 14. One end of the hose guide 18 extends from the reel base support 40 and a pulley 41 is pivotally attached to the other end of the hose guide 18. The pulley 41 guides a hose as it is unreeled from the hose reel 14. A handle 43 preferably extends from the hose guide 18. The handle 43 enables an operator to pivot the reel frame 12 relative to the base frame 10.

The reel frame 12 is preferably pivotally retained by the base pivot frame 22 with a pivot pin 46 and the pivot bushing 38. The pivot pin 46 is inserted through the reel base support 40 and into the bushing 38 disposed in the base pivot frame 22. A thrust washer 47 is preferably disposed between a bottom of the reel base support 40 and a top of the bushing 38. The thrust washer 46 decreases the pivoting friction between the reel base support 40 and the base pivot frame 22. A retractable indexing pin and indexing holes may be used to lock the reel frame 12 at a particular angle relative to the base frame 10. Retractable indexing pins are well known in the art and need not be illustrated.

With reference to figure 6, the reel 14 includes a hose reel 48, an axle 50, and a rotary union 52. The hose reel 48 includes a reel portion 54 and a pair of drive plates 56. The pair of drive

plates 56 are attached to an inner diameter 58 of the reel portion 54. The axle 50 includes an inner diameter 60, a hose outlet 62, and an attachment flange 64. The axle 50 is secured to the hose reel 48 by fastening the attachment flange 64 to one of the drive plates 56 with fasteners or the like. An opening is formed through the axle 50, adjacent the hose outlet 62 to allow the flow of liquid through the axle 50 and hose outlet 62.

The hose outlet 62 of the axle 50 must be aligned with a hose opening 66 formed through the reel portion 54 to allow a hose 68 to be attached to the hose outlet 62. The hose end of the axle 50 is sealed and the other end is open. The rotary union 52 is attached to the open end of the axle 50. Liquid is capable of flowing through a supply tube 70, the rotary union 52, the inner diameter 60, and the hose outlet 62 into the hose 68. A sprocket boss 72 is preferably formed on the drive plate 56 opposite the attachment flange 64. Preferably, a chain sprocket 74 is attached to the sprocket boss 74. Other drive methods besides a chain drive may be used to rotate the reel 14, such as gear drive.

A single roller bearing 76 is mounted on a top of each upright member to allow the reel 14 to rotate relative to the reel frame 12. Each roller bearing 76 is sized to receive a single end of the axle 50. The roller bearing 76 is preferably a pillow block type of roller bearing. A hydraulic motor 16 is preferably mounted to the motor upright member 42. The hydraulic motor 16 rotates the chain sprocket 74 through a drive sprocket 80 and chain 82. A hydraulic valve 84 is preferably mounted on a top of the motor

upright member 42. The hydraulic oil supplied to the hydraulic motor 16 is controlled by the hydraulic valve 84. The hydraulic oil is supplied by the hydraulic system of the skid steer 100. The hydraulic reel 1 may be moved wherever desired with the skid steer 100.

While particular embodiments of the invention have been shown and described, it will be obvious to those skilled in the art that changes and modifications may be made without departing from the invention in its broader aspects, and therefore, the aim in the appended claims is to cover all such changes and modifications as fall within the true spirit and scope of the invention.